Form INV-2 EMISSION POINT DESCRIPTION

Duplicate this form for EACH Emission POINT

1) Company/Facility Name	Grain Elevator Inc	1a) Form INV-2 Page		of	
2) Emission Point Number	EP-10				
3) Emission Point Description	Receiving Pit #3 Stack				
4) Is this stack/vent used as an Emergency Bypass Stack?	No ☒	Yes ☐			
If YES, for which stack(s)? List Emission Point Nos.:					

EMISSION POINT INFORMATION

5) Emission Point Type

Stack/Vent	☒	
Fugitive (specify)	☐	
Other (specify)	☐	

6) Stack Shape and Dimensions: (interior dimensions at exit point)

Circular Diameter:	☒	10	inches			
Rectangular Dimensions:	☐		inches	X		inches
Other Dimensions	☐		inches			

7) Stack Height Above Ground	45	feet

8) Does the Emission Point have a rain cap (or anything else) which obstructs the flow of gases leaving the Emission Point, or a horizontal discharge?

No	☒	YES (specify):	☐	

9) COMPOSTION OF EXHAUST STREAM

Exhaust Stream Characteristics	Emission Point Composition of Exhaust Stream	Units of Measure
a) Flow Rate	20,000	☒ ACFM ☐ SCFM
b) Temperature	70	Degree Fahrenheit

10) BYPASS STACKS

Bypass Stack – Emission Point No.		Bypass Stack Description	
Bypass Stack – Emission Point No.		Bypass Stack Description	

11) LIST OF EMISSION UNITS VENTING THROUGH THIS EMISSION POINT

Emission Unit No.	Emission Unit No	Emission Unit No.	Emission Unit No.
EU-10			

Duplicate this form as needed

TYPE ALL INFORMATION

(DNR Form 542-4004. November 1, 2006)

Form INV-3 EMISSION UNIT DESCRIPTION – POTENTIAL EMISSIONS

Duplicate this form for EACH Emission UNIT

1)	Company/Facility Name	Grain Elevator Inc	1a) Form INV-3 Page		of		
2)	Emission Point Number	EP-10					
	EMISSION UNIT (PROCESS) IDENTIFICATION & DESCRIPTION						
3)	Emission Unit Number	EU-10					
4)	SCC Number	30200551					
5)	Description of Process	Receiving Grain From Straight Trucks					
6)	Date of Construction	3-1-57	7) Date of Installation	3-1-57	8) Date of Modification		
9)	Raw Material – OR Fuels Used List worst case for EACH pollutant	Corn					
10)	Federally Enforceable Limit	50 tons PM_{10}/yr for the entire facility					
11)	Permit or Rule Establishing Limit	08-A-000					
12)	Maximum Hourly Design Rate	280	Tons	Per Hour			
13)	AIR POLLUTION CONTROL EQUIPMENT (CE)						
	Control Equipment Number	**CE-10**					
	Control Equipment Description	**Oil Application**					
	Control Equipment Number						
	Control Equipment Description						

POTENTIAL EMISSIONS

14 Air Pollutant	15 Emission Factor	16 Emission Factor Units	17 Source of E.F.	18 Ash or Sulfur %	19 Potential Hourly Uncontrolled Emissions (Lbs/Hr)	20 Combined Control Efficiency	21 Transfer Efficiency	22 Potential Hourly Controlled Emissions (Lbs/Hr)	23 Potential Annual Emissions (Tons/Yr)
PM-2.5	.010	Lbs/ton	AP-42		2.80	40		1.68	1.50
PM-10	.059	Lbs/ton	AP-42		16.52	40		9.91	8.85
SO_2									
NOx									
VOC									
CO									
Lead									
Ammonia									
POTENTIAL EMISSIONS - HAPs and additional regulated air pollutants – list the pollutant name in Column 14									

*Sources of Emission Factors: CEM .. Stack Test .. Mass Balance .. AP-42 .. WebFIRE.. TANKS.. EPA-L&E .. Worksheet .. Other – Specify

Duplicate this form as needed

TYPE ALL INFORMATION

(DNR Form 542-4001. November 1, 2006)

Form INV-4 EMISSION UNIT DESCRIPTION – ACTUAL EMISSIONS

Duplicate this form for EACH Emission UNIT

1) Company/Facility Name	Grain Elevator Inc		1a) Form INV-4 Page		of
2) Emission Year	20--	3) Emission Point Number	EP-10		

EMISSION UNIT – ACTUAL OPERATIONS AND EMISSIONS

4) Emission Unit Number	EU-10	5) SCC Number	30200551
6) Description of Process	Receiving Grain From Straight Trucks		

ACTUAL THROUGHPUT

7) Raw Material	Corn		
8) Actual Throughput – Yearly Total	50,000	9) Units Raw Material	Tons

Actual Operating Rate/Schedule

	10) Percent of Total Operating Time	11) Hours/Day	12) Days/Week	13) Weeks/Quarter
JAN – MAR	10	4	5	10
APR – JUN	0	0	0	0
JUL – SEP	10	4	5	10
OCT - DEC	80	12	6	13

14) AIR POLLUTION CONTROL EQUIPMENT (CE)

Control Equipment Number	CE-10
Control Equipment Description	Oil Application
Control Equipment Number	
Control Equipment Description	

ACTUAL EMISSIONS

15 Air Pollutant	16 Emission Factor	17 Emission Factor Units	18 Source of E.F.	19 Ash or Sulfur %	20 Combined Control Efficiency	21 Transfer Efficiency	22 Actual Emissions (Tons/Yr)
PM-2.5	.010	Lbs/ton	AP-42		40		.15
PM-10	.059	Lbs/ton	AP-42		40		.89
SO_2							
NOX							
VOC							
CO							
Lead							
Ammonia							
ACTUAL EMISSIONS - HAPs and additional regulated air pollutants – list the pollutant name in Column 15							

*Sources of Emission Factors: CEM .. Stack Test .. Mass Balance .. AP-42 .. WebFIRE.. TANKS.. EPA-L&E .. Worksheet .. Other – Specify

Duplicate this form as needed TYPE ALL INFORMATION (DNR Form 542-4002 November 1, 2006)

Form INV-5 CALCULATIONS

Duplicate this form for each Form it will accompany in the Questionnaire

1) Company/Facility Name	Grain Elevator Inc			1a) Form INV-5 Page		of
2) Emission Point No.	EP-10	3)	Emission Unit No.	EU-10		
4) Calculations are provided in support of information reported on Form INV -	3 ☒	4 ☐	for the Emission Point and Emission Unit listed above.			
5) Emissions Calculations						

This methodology should be followed for all grain receiving from straight trucks at grain elevators:

Maximum hourly design rate of grain receiving from straight trucks = 280 tons/hr

$PM_{2.5}$ emission factor for grain receiving from straight trucks per AP-42, Table 9.9.1-1 = .010 lbs/ton (uncontrolled factor)

PM_{10} emission factor for grain receiving from straight trucks per AP-42, Table 9.9.1-1 = .059 lbs/ton (uncontrolled factor)

Potential hourly uncontrolled emissions:

$PM_{2.5}$ = 280 tons/hr x .010 lbs/ton = 2.80 lbs/hr

PM_{10} = 280 tons/hr x .059 lbs/ton = 16.52 lbs/hr

Oil is applied to the grain in the receiving pit, therefore a combined control efficiency (40%) has been applied to calculate hourly controlled emissions.

Potential hourly controlled emissions:

$PM_{2.5}$ = 280 tons/hr x .010 lbs/ton x (1-.40) = 1.68 lbs/hr

PM_{10} = 280 tons/hr x .059 lbs/ton x (1-.40) = 9.91 lbs/hr

Potential annual emissions:

To calculate $PM_{2.5}$ and PM_{10} potential annual emissions multiply the highest actual grain throughput from the last five years by 1.2. Multiply the adjusted actual throughput by the emission factor, then by the combined control efficiency and divide by 2,000.

Highest actual throughput in the last five years = 416,667 tons/yr

416,667 tons/yr x 1.2 = 500,000 tons/yr

$PM_{2.5}$ = 500,000 tons/yr x .010 lbs/ton x (1-.40) x 1 ton/2,000 lbs = 1.50 tons/yr

PM_{10} = 500,000 tons/yr x .059 lbs/ton x (1-.40) x 1 ton/2,000 lbs = 8.85 tons/yr

Form INV-5 CALCULATIONS

Duplicate this form for each Form it will accompany in the Questionnaire

1) Company/Facility Name	Grain Elevator Inc			1a) Form INV-5 Page	of
2) Emission Point No.	EP-10	3)	Emission Unit No.	EU-10	
4) Calculations are provided in support of information reported on Form INV -	3 ☐	4 ☒	for the Emission Point and Emission Unit listed above.		
5) Emissions Calculations					

This methodology should be followed for all grain receiving from straight trucks at grain elevators:

Actual emissions from all processes at Group 2 Grain Elevators should be calculated using *actual throughput* data from the applicable emission year.

Oil is applied to the grain in the receiving pit, therefore a combined control efficiency (40%) has been applied to calculate actual emissions.

Actual emissions:

To calculate actual emissions, multiply the actual grain throughput by the appropriate emission factor, then by the combined control efficiency and divide by 2,000.

$PM_{2.5}$ = 50,000 tons x .010 lbs/ton x (1-.40) x 1 ton/2,000 lbs = .15 tons

PM_{10} = 50,000 tons x .059 lbs/ton x (1-.40) x 1 ton/2,000 lbs = .89 tons